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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,326	11/18/2003	Thomas W. Stone	10020908-1	8276

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AGILENT TECHNOLOGIES, INC.
Intellectual Property Administration
Legal Department, DL 429
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EXAMINER

KIM, JOANNE H

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/717,326	Applicant(s) STONE, THOMAS W.	
	Examiner Joanne H. Kim	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/18/2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/18/2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: 75 in page 7. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:
in page 9, paragraph [0030], line 13, "210" should be "200";
paragraph [0031], line 15, the second period after "140" should be deleted; and
in page 10, paragraph [0034], line 6, a space should be entered between "4" and "is."

Appropriate correction is required.

Claim Objections

3. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 13 recites the limitation "the pixellated optical reflector" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

7. Claims 8-17 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: structural cooperative relationships between an optical recombining sub-system and the rest of the elements in claim 8 and between a pair of recombining diffraction gratings and the rest of the elements in claim 14. It is unclear how the optical recombining sub-

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system/the pair of recombining diffraction gratings is connected to the rest of the elements in the claims.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-13, 18 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Bouevitch (U.S. Patent Publication No. US 2003/0021526).

9. Regarding claim 1, Bouevitch discloses a method for compensating for a chromatic dispersion in optical system comprising the steps of: separating input optical radiation into chromatic components; propagating the chromatic components through the optical system by reflecting the chromatic components and providing a pre-selected relationship, which compensates for the chromatic dispersion, between optical path lengths of the chromatic components; and recombining the chromatic components after propagating through the optical system (paragraph [0003] and paragraph [0061], lines 4-15).

10. Regarding claim 2, Bouevitch discloses reflecting the chromatic components from a volume optical reflector (Figs. 5a and 5b; and paragraph [0085]).

11. Regarding claim 3, Bouevitch discloses reflecting the chromatic components from a switchable pixellated holographic mirror (552) (Fig. 5b; and paragraph [0086], lines 4-5 and 11-12).

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12. Regarding claim 4, Bouevitch discloses focusing the input optical radiation (paragraph [0102]).

13. Regarding claim 5, Bouevitch discloses propagating the input optical radiation through at least one separating diffraction grating (Fig. 1b; and paragraph [0061], lines 1-5).

14. Regarding claim 6, Bouevitch discloses propagating the chromatic components through at least one recombining diffraction grating (Fig. 1b; and paragraph [0061], lines 12-15).

15. Regarding claim 7, Bouevitch discloses that the at least one recombining diffraction grating is the same as the at least one separating diffraction grating (Fig. 1b; and paragraph [0061], lines 4-5 and 14-15).

16. Regarding claim 8, Bouevitch discloses a chromatic dispersion compensated optical system comprising: an optical separating sub-system (120) capable of separating input optical radiation into chromatic components; an optical recombining sub-system (120) capable of recombining the chromatic components for output; and a volume optical reflector (142 in Figs. 3a and 3b, 526 in Fig. 5a, and 552 in Fig. 5b) capable of reflecting the chromatic components and providing a pre-selected relationship, which compensates chromatic dispersion, between optical path lengths through the optical systems of the chromatic components (Fig. 1b; paragraph [0003]; and paragraph [0061], lines 4-15).

17. Regarding claim 9, Bouevitch discloses a switchable liquid crystal array (130 in Figs. 3a and 3b, and 527 in Fig. 5a) interposed between the reflector and the optical recombining sub-system (Figs. 1b; and paragraph [0085], lines 6-15).

18. Regarding claim 10, Bouevitch discloses an optical focusing component (990) capable of focusing separated input optical radiation onto the volume optical reflector (Fig. 9).

19. Regarding claim 11, Bouevitch discloses that the volume optical reflector comprises a pixellated switchable holographic mirror (552) (Fig. 5b; and paragraph [0086], lines 4-5).

20. Regarding claim 12, Bouevitch discloses that the optical recombining sub-system is the same as the optical separating sub-system (Fig. 1b; and paragraph [0061], lines 4-5 and 14-15).

21. Regarding claims 13 and 18, Bouevitch discloses a directing optical element (110b) capable of directing the separated input optical radiation to the optical reflector, and a redirecting optical element capable of redirecting optical radiation reflected from the optical reflector to the switchable element (144 and 146) (Figs. 1b, 3a and 3b).

22. Regarding claim 21, Bouevitch discloses that the volume optical reflector comprises a phase conjugate mirror (610 in Fig. 6a).

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouevitch in view of Shirasaki et al. (U.S. Patent Publication No. US 2002/0114090, herein after "Shirasaki").

25. Regarding claims 14 and 19-20, Bouevitch discloses a chromatic dispersion compensated optical system comprising: a separating diffraction grating (120) capable of separating input optical radiation into chromatic components; a recombining diffraction grating (120) capable of recombining the chromatic components; an optical reflector (526 in Fig. 5a and 552 in Fig. 5b) capable of reflecting the chromatic components and providing a pre-selected relationship, which compensates chromatic dispersion, between optical path lengths through the optical systems of the chromatic components; and a switchable element (527) capable of receiving the separated chromatic components and outputting separating output chromatic components interposed between the optical reflector and the recombining diffraction grating (Fig 1b; paragraph [0061], lines 4-15). However, Bouevitch does not disclose a pair of separating diffraction gratings and a pair of recombining diffraction gratings. Shirasaki discloses a spatial grating pair arrangement including a pair of separating diffraction gratings (68 and 71) used to compensate for chromatic dispersion (Fig. 6; and paragraph [0015]). It would have been obvious to modify Bouevitch to include a pair of separating diffraction gratings such as that taught by Shirasaki in order to provide additional compensation for chromatic dispersion. Further, since the separating diffraction grating is the same as the recombining diffraction grating in Bouevitch,

Bouevitch in view of Shirasaki also discloses a pair of the recombining diffraction gratings.

26. Regarding claim 15, Bouevitch discloses a switchable liquid crystal array (527 in Fig. 5).

27. Regarding claim 16, Bouevitch discloses an optical focusing component (990) capable of focusing separated input optical radiation onto the volume optical reflector (Fig. 9).

28. Regarding claim 17, Bouevitch discloses that the recombining diffraction grating is the same as the separating diffraction grating (Fig. 1b and paragraph [0061], lines 4-5 and 14-15).

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Publication No. US 2002/0176659 to Lei et al.

U.S. Patent No. 5,414,540 to Patel et al.

U.S. Patent No. 3,988,614 to Kapron et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joanne H. Kim whose telephone number is (571) 272-2139. The examiner can normally be reached on 8:30 a.m. to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joanne H. Kim
Examiner
Art Unit 2883

jk



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Supervisory Patent Examiner
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